TECH SHEET 3

AVOCADO NUTRITION

Fertiliser is important, but many other factors are vital to getting maximum production and sustainability of a commercial avocado crop.
This fact sheet details the total package of factors necessary for ideal nutrition.

The principles of nutrition for avocados producing a commercial crop

Your specific nutrient programme will depend on a number of factors some of which are described below. For a nutrient programme tailored to your trees specific requirements professional advice is recommended. Refer to the NZ Avocado Growers' Association Growers Manual for more details on avocado nutrition.

Philosophy

Fertilisers are an important tool to drive certain outcomes from the tree at specific times of the year. They are a means to an end, not an end in themselves. Some examples of whole plant physiology influenced by nutrients are listed below.

Outcome	Nutrient required
Vegetative flush and general vigour	N, P, K, Fe and water
Big fruit	N, K, B and water
Reverse winter leaf yellowing	Foliar N and Mg
Enhance fruit set	B, Zn
Yield	N, K
Fruit quality	Ca, B and Zn
Root functioning	P, N, Ca and water

Nutrients are divided into two groups

Macro elements are minerals the trees need in relatively large amounts. They are nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulphur (S). Micro elements are minerals the trees need in very small amounts. They are boron (B), zinc (Zn), manganese (Mn), iron (Fe), copper (Cu) and sodium (Na).

In New Zealand, soils are often well-weathered and leached, with some quite severe trace element deficiencies. Therefore the following key elements require special attention and should be considered and addressed in an annual fertiliser programme:

• Nitrogen • Potassium • Calcium • Magnesium • Zinc • Boron • Manganese

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Nutrition problems are identified by:

- Chemical analysis of leaves and comparing the values to accepted "normal" leaf values.
- Nutrient levels in the soil where targets are set depending on soil type, characteristic and condition.
- And the visual appearance and condition of leaves, fruit and the whole tree.

There are different approaches to nutrition - from proactive application to drive a certain orchard outcome by maintaining a balanced nutrient sufficiency - to a reactive approach where nutrient deficits are identified and amended. Consult with your orchard advisor to determine which approach is being used on your orchard!

Good nutrition is one cornerstone to getting your trees to crop well and consistently, through its effects on the shoot and root growth and fruiting balance.

The following facts regarding nutrition should always be borne in mind

- The balance between nutrients is important – an excess in one may depress the levels of another eg zinc versus phosphate or potassium versus magnesium.
- Fertiliser application is to supplement and address any shortfall in natural nutrition from mineralization and soil recharge.
- There is a fine line between deficit and excess, more is not always better!
- Applications that are little and often work best on light, well leached soils such as the sands and volcanic ash soils of the Far North and Bay of Plenty.
- Soils with high clay contents require a different fertiliser programme to light soils due to their higher CEC (Cation Exchange Capacity - ability of the soil to hold nutrients) and better storage of nutrients.
- Soil moisture levels determine the ability of roots to take up nutrients; if the soil is dry the nutrients are not dissolved and cannot be taken up by the roots.
- The nitrogen balance of an orchard depends on the soil organic matter and microbial activity and water status.
- Soil pH affects nutrient availability and liming at the right rate and at the right time is important.
- Soil temperature is important in influencing root activity and nutrient conversion, particularly nitrogen cycling and mineralization. Therefore there should be attention to timing and type of fertiliser applied when soil conditions are less optimum (below 12°C).

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